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ISO/IEC 23090-35

Information technology — Coded representation of immersive media —

Part 35: Conformance and reference software for low latency, low complexity LiDAR coding

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Foreword

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This document was prepared by Joint Technical Committee ISO/IEC JTC 1, *Information technology*, Subcommittee SC 29, *Coding of audio, picture, multimedia and hypermedia information*.

A list of all parts in the ISO/IEC 23090 series can be found on the ISO and IEC websites.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html and www.iec.ch/national-committees.

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Introduction

0.1 General

This document specifies reference software and conformance testing for ISO/IEC 23090-30 low latency, low complexity LiDAR coding (L3C2).

0.2 Purpose

The purpose of this document is to provide the following:

— Reference decoder software for decoding ISO/IEC 23090-30 compliant bitstreams.

— Reference encoder software for generating ISO/IEC 23090-30 compliant bitstreams.

— Procedures to test bitstream and decoder conformance.

— A set of reference bitstreams conforming to ISO/IEC 23090-30.

0.3 Examples of use

Some examples of uses that can be appropriate for the reference decoder software are as follows:

— As an illustration of how to perform the decoding process specified in ISO/IEC 23090-30.

— As the starting basis for the implementation of a decoder that conforms to ISO/IEC 23090-30.

— For testing the conformance of a decoder implementation with the decoding process specified in ISO/IEC 23090-30.

— For testing the conformance of a bitstream to the constraints specified for bitstream conformance in ISO/IEC 23090-30, as the software can detect and report many bitstream conformance violations.

NOTE 1 The lack of the detection of any conformance violation by the reference decoder software is not definitive proof that the bitstream conforms to all constraints specified for bitstream conformance in ISO/IEC 23090-30.

Some examples of uses that can be appropriate for the reference encoder software are as follows:

— As an illustration of how to perform an encoding process that produces bitstreams that conform to the constraints specified for bitstream conformance in ISO/IEC 23090-30.

— As the starting basis for the implementation of an encoder that conforms to ISO/IEC 23090-30.

— As a means of generating bitstreams for testing the conformance of a decoder implementation with the decoding process specified in ISO/IEC 23090-30.

— As a means of evaluating and demonstrating examples of the quality that can be achieved by an encoding process that conforms to ISO/IEC 23090-30.

NOTE 2 No guarantee of the quality that will be achieved by an encoder is provided by its conformance to ISO/IEC 23090-30, as the conformance of an encoder to ISO/IEC 23090-30 is defined only in terms of format constraints imposed on the bitstream syntax. The reference encoder software provides some illustrative examples of what quality can be achieved in conformance to ISO/IEC 23090-30, it does not define minimum encoding quality or maximum encoding quality.

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Information technology — Coded representation of immersive media —

Part 35: Conformance and reference software for low latency, low complexity LiDAR coding

1 Scope

This document provides accompanying reference software for ISO/IEC 23090-30. The software is an integral part of this document.

The use of this reference software is not required to make an implementation of an encoder or decoder in conformance to ISO/IEC 23090-30. Requirements established in ISO/IEC 23090-30 take precedence over the behaviour of the reference software.

This document also specifies a set of tests and procedures designed to indicate whether encoders or decoders meet the normative requirements specified in ISO/IEC 23090-30.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 23090-30:2026, *Information technology — Coded representation of immersive media — Part 30: Low latency, low complexity light detection and ranging (LiDAR) coding*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 23090-30 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
bitstream
sequence of bits representing compressed point cloud data structured according to the syntax of a specific coding specification

3.2
decoder
process or device that reconstructs point cloud data from a structured bitstream conforming to a specific coding specification

Note 1 to entry: Decoder does not include the point cloud rendering process, which is outside the scope of this document.

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3.3
encoder
embodiment of a process that produces a bitstream

3.4
reference software decoder
software implementation of the decoding process that reconstructs point cloud data from a structured bitstream conforming to a specific coding specification

3.5
reference software encoder
software implementation that compresses point cloud data into a structured bitstream conforming to a specific coding specification

4 Abbreviated terms

The abbreviated terms in ISO/IEC 23090-30:2026, Clause 4 apply.

5 Conventions

The conventions specified in ISO/IEC 23090-30:2026, Clause 5 apply.

6 Reference software for ISO/IEC 23090-30

Reference software is useful in aiding users of a compression standard to establish and test conformance and interoperability, and to educate users and demonstrate the capabilities of ISO/IEC 23090-30:2026. The reference software for ISO/IEC 23090-30:2026 is available at: https://standards.iso.org/iso-iec/23090/-35/ed-1/en/.

The software package contains one part:

— mpeg-pcc-tml software: Support for Simple and Main profiles.

The reference software manual is mpeg-pcc-tml-sw-manual.pdf. This manual can be used to install and use the reference software.

7 Conformance testing for ISO/IEC 23090-30

7.1 General

The following subclauses specify normative tests for verifying conformance of bitstreams as well as decoders. Those normative tests make use of test data (bitstream test suites) provided are available at: https://standards.iso.org/iso-iec/23090/-35/ed-1/en/ and the reference software decoder specified in Clause 6.

7.2 Bitstream conformance

Bitstream conformance follows the specification text in ISO/IEC 23090-30.

7.3 Decoder conformance

Decoder conformance for ISO/IEC 23090-30, such as conformance point, etc., is specified by ISO/IEC 23090-30:2026, 6.5.1.

7.4 Procedure to test bitstreams

A bitstream that claims conformance with ISO/IEC 23090-30 shall pass the following normative test.

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